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ABSTRACT

The 1998 Aspen Systems Conference on Telecommunications Policy met to consider ways of speeding the deployment of telecommunication systems that allow for robust, reliable, and innovative communications services to the home. By organizing participants into three working groups, the session was able to come up with analytical suggestions and policy recommendations designed to accomplish this central objective of getting broadband access to as many residences as possible, as quickly as economically sensible and technically feasible. The groups considered the following questions: (1) Exactly what capabilities and services would we like to see homes obtain? (2) Given the long and costly history of regulatory delay and corporate gamesmanship, can we devise new paradigms of regulation that will speed deployment of residential broadband? and (3) What should be the universal service goals and mechanisms for a new telecommunication system in which broadband is the standard for residences?. This document distills both the group reports and the plenary discussion sessions, conveying the key observations, points of agreement, and disputes. Topics discussed include: defining access needs; a new paradigm for telecommunications policy and regulation; actions under existing regulatory paradigms; and modernizing universal service. A list of conference participants is appended. (AEF)

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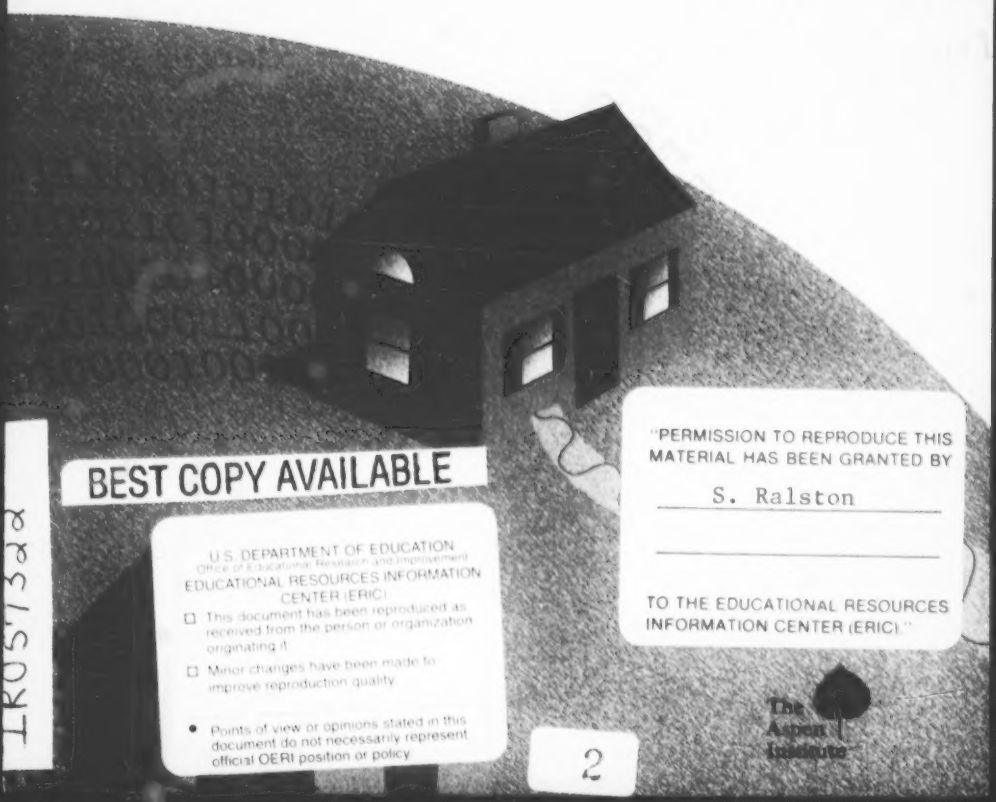
Residential Access to Bandwidth: Exploring New Paradigms

The Thirteenth Annual Aspen Institute Conference on Telecommunications Policy

Robert M. Entman, Rapporteur



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Residential Access To Bandwidth: Exploring New Paradigms

A Report of
The Thirteenth Annual Aspen Institute Conference on
Telecommuncations Policy

Robert M. Entman
Rapporteur

The Aspen Institute
Communications and Society Program
Charles M. Firestone
Executive Director
Washington, DC
1999

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In memory of James Ronald Cross

(1946-1998)

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Foreword

The enlightenment in the Middle Ages was facilitated by the printing press, which reduced the cost of information and broadened citizens' access to knowledge. Likewise, the success or failure of the twentieth century's digital renaissance largely depends on the ubiquitous deployment of broadband services to the home. Until American households gain widespread access to broadband services at affordable prices, we cannot fully reap the benefits heralded by the information revolution.

In this context, the Aspen Institute convened the Thirteenth Annual Aspen Institute Conference on Telecommunications Policy, August 9-13, 1998, in Aspen, Colorado, to discuss, "Residential Access to Bandwidth." At this conference, participants reached near consensus that the ubiquitous deployment of residential broadband services is both normatively desirable and economically feasible. They identified the current regulatory regime as one of the biggest barriers to the realization of this public policy objective and offered solutions to promote broadband to the home within the current regulatory structure. Likewise, they suggested a new regulatory paradigm. In suggesting regulatory reform, participants offered recommendations to bring the telephone-based universal service tradition into the broadband future.

Within the current regulatory framework, participants offered two main suggestions: minimize regulatory uncertainty and reduce government intervention wherever possible. In the new model developed by conference participants, companies would compete through the marketplace instead of the courts and collaborate more frequently on shared concerns through issue-oriented conferences. Where disputes arise, the paradigm encourages negotiated settlements.

To encourage widespread delivery of broadband services to lower income households, participants widely supported the idea of targeted subsidies. However, they disagreed on what services should be eligible for such programs. Participants held firmly that subsidies be provided to individuals and communities rather than

to companies. To this end, they noted that the "E-rate" model of universal access was preferable to the traditional model of universal service subsidies prevalent in the telephony realm.

Although the report details these and other, more specific suggestions, it is important to note that no votes were taken, and participants were not asked to sign any particular statements. Thus, the observations of consensus are those of the rapporteur and should in no way be construed as the statement of any particular participant or employer unless specifically noted as such. Furthermore, these suggestions and others debated at the Aspen Conference are intended as suggestions to advance the dialogue and deliberation on these issues in other fora, not necessarily the definitive answers.

Acknowledgments

As indicated in the front of this volume, this report is dedicated to the memory of James Ronald Cross, Vice President of Regulatory Policy at Nortel Networks, in honor of his commitment to advancing substantive dialogue on telecommunications policy. We will sorely miss Ron's decade-long participation in our domestic and international conferences on telecommunications policy.

We want to take this opportunity to thank, once again, Robert Entman, who has served as rapporteur for all thirteen conferences. We appreciate his faithful representation of the deliberations as well as his help in developing reading materials for the conference.

We also thank each of the participants for their involvement in the conference and for their follow-up afterward. Additionally, we thank Amy Garmer, associate director, Sylvia Pear, publications manager, Rebecca Weaver, graphic design specialist, Beth Wachs, program associate, and Susan Crissinger, copy editor, for their help in editing, proofing, designing, and producing the final Report. Special thanks to Patricia Kirsch, program coordinator, and Sunny Sumter, program coordinator, for their invaluable assistance in coordinating the conference and producing the final Report.

Finally, but very significantly, we gratefully acknowledge and thank the sponsors of the Aspen Institute Conference on Tele-

communications Policy: Ameritech, AT&T, Bell Atlantic, Cablevision Systems Corporation, Cox Enterprises, EDS, GTE, Intel, MCI Communications Corporation, Nortel, SBC Communications, Sprint, TCG, Teligent, and US West.

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and
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The Aspen Institute
January 1999

Residential Access to Bandwidth: Exploring New Paradigms

Robert M. Entman

Introduction

The 1998 Aspen Institute Conference on Telecommunications Policy met to consider ways of speeding the deployment of telecommunication systems that allow for robust, reliable, and innovative communications services to the home. There was wide agreement that this means, in essence, getting broadband access to as many residences as possible, as quickly as economically sensible and technically feasible. By organizing the participants into three working groups, the session was able to come up with analytical suggestions and policy recommendations designed to accomplish this central objective. The three groups considered:

1. Exactly what capabilities and services would we like to see homes obtain?
2. Given the long and costly history of regulatory delay and corporate gamesmanship, can we devise new paradigms of regulation that will speed deployment of residential broadband?
3. What should be the universal service goals and mechanisms for a new telecommunication system in which broadband is the standard for residences?

Groups consisted of participants representing major interests in the telecommunications field, including telephone and cable companies, large users of telecommunications services, and federal, state, and local government agencies. As each group presented its thoughts—sometimes a consensus, often a majority view with qualifications appended—the entire group discussed their ideas and pressed for modifications and clarifications. Groups then each produced a final report.

The present document distills both the group reports and the plenary discussion sessions, conveying the key observations, points of agreement, and disputes. To boil the discourse down to a few major themes:

- Ubiquitous residential access to broadband, or close to it, is a realistic and desirable goal.
- Government officials and competing telecommunication firms must begin cooperating to design processes that will reach fair but expeditious policy decisions. A new regulatory paradigm should jettison unproductive conflict, replacing competition in the courtroom by competition in the marketplace. This model would encompass such mechanisms as alternative dispute resolution, negotiated rulemakings, and expedited adjudication. Failing these innovative moves, the disappointingly slow roll-out of broadband and other competitive advanced telecommunication capabilities and services could continue, to the detriment of the economy and citizens' welfare.
- The universal service tradition can be updated and adapted to the evolving broadband world by using market indicators of when services become "essential" and then carefully calibrating and targeting subsidies.

Access To What?

The working group suggested that residential broadband will develop as it enters the marketplace, increasing over time in richness of capabilities and uses. As time progresses, residential broadband will move essentially from its initial function of providing homes with speedy data links—fast text-based access to the Internet—toward giving residences a full range of multimedia offerings that include digital audio and video. This means that over the course of five years the aims of policy makers should adapt. The first goal, the one to seek today, is connecting homes to the Internet at speeds beyond what now seems the unacceptably slow rate of integrated services digital network, 128 kilobytes per second (kbps). This rate of data transfer is only twice what common

analog modems now offer over standard phone lines, and indeed a new analog modem now provides 128 kbps access for homes that can use two phone lines simultaneously. Telecommunication firms are now touting transfer rates of 1,000 kbps (or 1 mbps) and more as attainable by digital modems that use cable television networks or telephone exchanges equipped with digital subscriber line (DSL) capacity. However, these technologies are readily available in relatively few communities and the pace of deployment to new markets seems slow. Head-on competition between high-speed connections by cable modem and by telephone company DSL seems even rarer; wireless access is rarer still. This section considers both realistic goals for broadband deployment, and the barriers that may be stifling attainment of even the near-term goal to make 1 Mbps service widely available.

For the long term, say in five years (2003), the working group sketched a scenario in which speeds greater than 6 mbps would be commonplace. Such connections would suffice for full motion video, allowing achievement of the long-standing vision of video on demand. That capability would pave the way for the true multimedia convergence of video, audio, and text. The price target for access to a high-speed broadband network would be around $30 per month—about what people pay now for cable television service.

Most, though definitely not all, conference participants expressed confidence that there would be a widespread consumer demand for broadband connectivity. Beyond the obvious and critical pull from the apparently insatiable desire for expanding video and multimedia entertainment options, other demand drivers include electronic commerce, distance learning, telemedicine, telecommuting, socializing, and enhanced civic involvement (e.g., information on local government services and issues).

Despite this impressive list of demands and suppliers, some attendees expressed skepticism or at least caution, citing the long history of seemingly promising services that flopped in the marketplace, including picturephone and interactive cable television. They also pointed out that different services require different amounts of bandwidth; it may turn out that most consumers don't need broadband even if they want some aspects of networked communication connectivity. And there is substantial uncertainty

as to exactly what consumers will want. Alex Netchvolodoff, vice president of Cox Enterprises, while voicing confidence in the transforming power of the Internet, cautioned, "We don't know what kinds of content will get people to use the Internet." But it seems likely the ingenuity of content and service providers will be up to the task of enticing consumers. Moreover, skepticism about the broadband future does not reckon with the critical fact that high-speed networked communication is already a reality at most large corporate, government, and educational workplaces. As people become accustomed to rapidly accessing e-mail, online shopping, news, and other yet-to-be-introduced services at work—and as doing work at home increasingly requires connection to the office network—demand for residential broadband will almost certainly mushroom. That prediction holds at least for the majority of the work force that is now white-collar.

Moreover, the working group provided a reasonable demonstration of economic feasibility. If we estimate the per-home cost of installing 5+ mbps capacity at $1,000, the target charge of $30 per month would allow capital recovery within a reasonable time, assuming penetration rates comparable to what cable television has achieved (about two-thirds of homes passed).

What, then, is holding things up? Some of the barriers are physical and organizational. For example, cable modems have been in short supply, and this obviously limits the ability of cable companies to offer service. The work force of cable and telephone companies, from installers to customer service representatives, must be educated in the new technology, and that takes time. Other barriers are technical or regulatory. Technical standards for many aspects of DSL are unclear, and such matters as loop management, interconnectivity, and running voice and data on the same or a separate wire pair remain unsettled. Competitive local exchange carriers (CLECs), which might want to enter this market, may have trouble obtaining co-location or needed interconnections from the incumbent local exchange carrier (ILEC). For their part, ILECs face a regulatory regime that does not give them particularly strong incentives to risk large investments in new services. For example, in some jurisdictions, "social contracts" that require rate cuts or rebates where profits exceed a target level may discourage major

new investment. This may hold even though the contracts were designed to preserve incentives for ILECs to take innovative risks. Potential solutions to these impediments created by regulation will be considered in the next section.

More generally, all players face uncertainty as to the meaning of current regulation and possible future regulatory decisions, and uncertainty usually discourages new investment in innovative technology and services. Beyond regulation, innovation is always constrained by market uncertainty, and by a kind of reverse demonstration effect: until it's clear that some form of residential broadband will be a roaring success in a diverse range of markets, firms will tend to hesitate before plunging in wholeheartedly.

In this section we've found that widespread residential broadband is an economically realistic and normatively desirable objective, but that a variety of barriers appears to be slowing its achievement. Although regulation is not the only source of constraint on broadband deployment, it provides the focal concern of this conference, so the remainder of the report concentrates on two matters: how regulation should change in order to enhance the deployment of residential broadband, and how universal service should be implemented in a context where broadband does in fact become the de facto standard level of residential telecommunications service.

Toward A New Regulatory Paradigm

The conference developed a creative array of ideas for overcoming barriers to rapid deployment rooted in the current regulatory system. It should be made clear that much of the delay is not the "fault" of any one participant in the system. Rather, it is the very structure of the regulatory system that forces most to act in ways that stymie achievement of the general good. After all, this system emerged from a monopoly telecommunication infrastructure that is long gone, one based on technical distinctions—e.g., between local and long-distance calling—that are just about obsolete. As it is, the system does not merely *reward* those who use regulatory, legislative, and court procedures to block competitors; it virtually compels players to act in this way. Because everyone else is doing it, those who fail to exploit whatever competitive advantage the regulatory system might offer are in essence failing to act competitively. This

is a classic game theory situation, in which the rules create disincentives to rational cooperation among individuals, most of whom might be better off if they could agree upon better rules. Thus conference participants came up with suggestions for processes that could at long last disrupt existing incentives and move toward fostering competition and its attendant benefits.

The goals of implementing the new paradigm, most initially suggested by Thomas Reiman, senior vice president of Ameritech, but widely supported by others, would focus and limit regulatory action to:

- encouraging new investment;
- delivering innovative services;
- protecting reasonable rates;
- ensuring dependable service;
- achieving ubiquitous connectivity or universal service, clearly defined by elected officials answerable to the public, which has to pay for any subsidies;
- maintaining consumer protection; and,
- employing the minimal amount of government regulation needed to attain these other goals.

Overall, the point of regulatory reform, as described by Kathryn Brown, chief of the Common Carrier Division at the FCC, would be to "manage the transition, while there's a revolution occurring, to achieve some consensus." Rather than the traditional process whereby regulators write rules, get comments, make rulings, and then begin a cycle of litigation, rewritten rules, more comments, and still more litigation, Brown argued that "Regulators should be traffic cops, building consensus around the rules of the road using an interactive process of dialog." Or in the words of Ted Jenkins, vice president of Intel, the idea is, "Get the parties together, hammer out a solution, certify the consensus so legislatures can accept it quickly, and avoid court intervention." Achieving this kind of outcome requires limiting regulation to the objectives in the above list.

These remarks capture the thrust of the key proposals for redesigning the regulatory process in the interest of a more productive and dynamic telecommunication industry. The central shared idea is finding ways for the warring parties to get togeth-

er, outside of the traditional, formal adversarial processes, to exchange ideas and come to mutually beneficial resolutions that forestall (or at least minimize) regulatory gamesmanship and legal wrangling. The keynote is building consensus, or at least genuine compromise, in venues that—unlike traditional regulatory settings—allow for rapid and frank give and take.

In some senses, the new paradigm introduces something like an auction to necessary regulatory decisions. At real auctions, participants plan out their goals and the prices they are willing to pay in advance, strategize about likely actions of competing bidders, then make quick incremental adjustments at the auction in response to competitors' actions. At the end, some will be disappointed and others gratified, but the decisions on allocating the auctioned goods will be settled in a process that was fair and open. The analogy is far from perfect. In the procedures discussed here, there is no final arbitrating currency like money. Instead, the negotiations and compromises will be based on the intellectual capital, the cleverness if you will, that parties bring to the table. And government officials will have to act as the final arbitrators—they will have far heavier lifting to do than simply raising and lowering an auctioneer's gavel. They will have to act as the honest brokers who weave from the disparate positions, oblique signals and strategic maneuverings of the participants a common cloth of compromise. And they will have to do this without unduly favoring players with greater concentrations of resources or political power.

Here then are the main ideas presented at the conference that participants felt might together comprise a new paradigm for telecommunication policy and regulation. Note that the paradigm does not mean an end to government involvement in telecommunications. On the contrary, government is the one entity that can bring the processes to a productive and lasting conclusion. Without wise, fair, and authoritative refereeing by public officials, decisions arising from the new processes will have—and deserve—little legitimacy, and therefore little lasting effect. Absent the honest and skilled broker, the results of the new meetings and exchanges will be subject to the standard rounds of dispute, decision, appeal, and more dispute before regulatory agencies and courts.

Develop New Procedures to Expedite Adjudication of Disputes Among Telecommunication Firms

Gail Garfield Schwartz, vice president of AT&T Local Services, represented the perspective of many competitive local exchange carriers (CLECs) who hope to enter the market in describing the frustrations her firm (now a subsidiary of AT&T, but formerly the independent company, TCG) has experienced in forging interconnection agreements with the incumbent local exchange carriers (ILECs). She described the great need for alternative dispute resolution "to reduce the endless avenues of appeal" that make achieving agreements such a lengthy process. Of course from the ILEC perspective, the length of the process and the appeals arise out of unreasonable demands being placed on them for use of their facilities at unremunerative rates by competitors seeking to siphon off many of the ILECs' most profitable customers. This very difference in perspective, stark as it is, illustrates the need for alternative dispute resolution. The point of such procedures is to give all parties, whether carriers in conflict with each other or with government regulators, incentives and means to resolve disputes expeditiously and fairly. In this way, too, disincentives arise to use litigation or regulatory processes mainly to delay a resolution.

Consider a concrete example of how one such mechanism might work. Say a firm has a problem with a particular local government ruling. It might go to the FCC and outline its case. A 30-day period of dispute resolution would follow, during which the FCC staff would set up a conference call with the affected parties, including city officials. In this conference, the FCC would urge that the city resolve the issue, and provide a basis for resolution in the FCC's interpretation of law, existing regulation, and perhaps court precedents. If the city agrees (with the stick of FCC preemption being held out as an incentive), all well and good. If not, the carrier could petition the FCC for an expedited ruling, one that would be forthcoming within 90 days. In this way, local government would have an incentive to come to a reasonable compromise (and to follow existing law) in order to avoid erosion of its authority to the federal officials. The FCC would be directed to resolve its own position quickly, in order to forestall gaming of even this process by the parties to the dispute. There is already precedent for expedited FCC

ruling on particular disputes (as opposed to general issues of policy). According to Robert Pepper, such "rocket docket" procedures are in use to settle some carrier-to-carrier issues.

Another concrete example is outlined by Bob Rowe, commissioner at the Montana Public Service Commission and chairman of the Communications Committee of the National Association of Regulatory Utilities Commissioners (NARUC). He describes a "collaborative approach" to resolving disputes arising from implementation of Section 271 of the Telecommunications Act of 1996, which sets the conditions for Bell operating company (BOC) entrance into the interLATA long-distance market. The basic quid pro quo is that the Bell company must satisfy a checklist that shows it has opened up its local market to CLECs; having done that, it would be allowed to compete in long-distance. As of this writing, several BOCs have applied for certification of compliance by the FCC and all have been rejected. To say the least, this has been a highly conflictful issue where the stakes are extremely high, so if alternate resolution mechanisms work here, they should work through a wide range of issues.

Rowe's proposed process for Section 271 reviews includes several features to be invoked when the Bell company files for certification of compliance. An important one is agreement by parties to stick to the pertinent issues and not try to use process to revisit and revise other decisions. Also, there should be regional coordination and information sharing on such matters as what constitutes acceptable provision of operating supporting systems (OSS) by the BOC. States in the US West region have already done this. The development and sharing of "best practices" information can help avoid a large set of misunderstandings and delays. In the case of Section 271, the FCC, NARUC, and the U.S. Department of Justice (DOJ) have already worked up a statement of best practices that "called for early notification of a BOC's intent to file an application, specified the information that should be included in the early notice, and urged simultaneous provision of information to the state commission, the DOJ and the FCC." The existing statement of best practices needs further development to improve coordination and understanding among parties. States can use them in conducting 14-point competitive checklist reviews.

Most importantly, there should be a process for working through the issues in less adversarial settings, *before* (or concurrently with) submission of the formal application for certification. Regional information sharing allowing for coordination on such conflictual matters as OSS provision by the BOC could help avoid reenacting the disputes and delays (and the reinvention of solutions) in state after state. Other benefits would include greater mutual understanding of needs and limitations of the Bell companies' and competitors' systems; a "more complete and less disputed" formal record for the FCC; an understanding of "what post-approval conditions, if any, might increase confidence that local markets are irrevocably open"; and, of course, faster entry of new competitors.

Expand Reliance Upon Technical Issues Conferences

As issues become more complex technically, policy and technical issues get blended. Technical experts getting together could resolve the technical issues and identify the real policy disputes. Moreover, heightened reliance upon joint technical standards conferences, ad hoc industry-regulatory fora involving experts, promises the ability to decide upon technical details for standards more straightforwardly than is possible in traditional FCC regulatory procedures. This will not solve all standards problems. In some areas there will be easy fixes, while in others there won't. At least any conferences that fail to resolve technical disputes will provide policy makers useful input. Several state commissions have already employed technical conferences with some success.

Identify Regulatory Best Practice and Systematically Disseminate This Information

The goal here would be to build on the claim that states are laboratories of policy innovation through a more active program of gathering and quickly transferring information across levels of government (and between agencies within the same level). In this way, where a "laboratory" actually succeeds, other government agencies would be more likely to know about it in a timely fashion. Some participants suggested employment of case study meth-

ods to evaluate agency processes and other forms of regulatory self-examination. Among others, NARUC and various joint federal-state boards sponsored by the FCC already serve to diffuse information about innovative regulatory practice. However, these venues are not designed chiefly to identify and disseminate such information. The point of this proposal is to establish (perhaps under FCC or NARUC auspices) an organization or a process that would have this as its core mission. Maintaining a website, and creating a listserv and on-line discussion groups, offer further vehicles for disseminating data on regulatory best practices. According to Bob Rowe, NARUC has now organized a "Best Practices" project,[2] which will solicit and disseminate concrete examples of improved public-sector (regulatory) or private-sector (industry) practices in a variety of areas.

Hold "Sunshine" Conferences to Clarify Positions and Seek Compromise Among Conflicting Telecommunication Interests

The conference appeared to generate a consensus on the need to enhance communication among industry participants, toward the end of reducing regulatory delay. As Henry Geller, Markle Foundation Communications Fellow, observed: "Ignorance of each industry's problems and positions fosters inordinate delay, unreasonable actions, and avoidable litigation. Parties should be fully informed of the needs and problems confronting each industry participant, and of options for handling these issues." Under FCC auspices, informal public conferences could be held to bring together appropriate representatives of government agencies and telecommunication firms. Perhaps the most immediately compelling focus for such gatherings could be the interconnection issues arising between ILECs and CLECs, with particular reference to broadband deployment. Even though such an open exchange of views will not resolve all the issues, it should in any event help regulators identify what various parties consider best practices or innovative ideas for policy. This could provide the basis of a best practices compendium, which would be of great help to the FCC and state commissions in resolving disputes.

To take a specific example, such a compendium, based on the exchange of views and experiences at the conference, could be

helpful in conducting "last offer" arbitration efforts. Where there is a dispute over pricing of interconnection, such procedures would allow the CLEC immediate interconnection access even as arbitration goes on. The condition is that the CLEC post a bond to assure financial performance under the ultimate decision by the arbitrator. The compendium of best practices could be consulted by arbitration officials to see the range of reasonable interconnection prices and arrangements agreed to in various jurisdictions around the country.

Encourage Negotiated Settlements

Growing out of the regulatory sunshine conferences designed to discover solutions that recognize the financial and economic incentives of all players, regulators should obtain broad industry and regulatory "buy-ins" to new rules before they are promulgated. In this way, government officials can increase chances of smooth implementation. After all, the players would have all gone on record as supporting the compromise on which these new rules were based. In more specific instances of conflict, say on interconnection, arbitration could be combined with negotiation to hasten settlements between ILECs and CLECs. The incumbent and a competitive LEC could agree in an informal forum on a fee schedule for conditioning lines and other services necessary for the latter to launch service. Arbitration could then follow if unresolved interconnection issues continue to block the competitor's entry.

Undertake Systematic Efforts to Stimulate Demand For Broadband

The government has a variety of means at its disposal to stimulate demand for and use of broadband communication networks. If nothing else, accelerating demand enlarges the pie of available revenue, makes investment appear less risky, and thus could reduce slightly the incentive to spend a firm's resources on stifling the other guys rather than on getting its services into the marketplace. The government might expand demand for broadband through its own equipment and telecommunication service purchases. Just as for business and electronic commerce, there is

enormous room for expansion of government's use of on-line transactions of all kinds. For example, electronic filing of income taxes is already commonplace, and it could be made more so by use of a user-friendly Web site. Not incidentally, this step could offer enormous financial savings to the IRS and the postal service, and even preserve a few forests worth of paper. In this and other cases, for government to take steps toward demand stimulation should not require any net drain on the public treasury. On the contrary, other mechanisms, such as tax incentives or grants for experimentation by other institutions (nonprofits, schools and universities, hospitals) would cost money in the short run. But in the longer run, adoption of telecommunication technology should generate efficiencies that will enhance social welfare and augment economic growth—and thereby contribute to tax revenues.

Bob Rowe and others also described efforts by state commissions and others to support local community and economic development programs in rural and underserved areas. These efforts recognize telecommunications as crucial to overcoming rural disadvantages of distance and disaggregation, and to capitalize on other community strengths. Tools include developing inventories of community resources and needs, aggregating loads, developing competitive bids, and piggybacking other efforts.

Actions Under Existing Regulatory Procedures

In addition to recommending a new paradigm, the conference discussed moves that should be taken even within the current regime. The main theme of these suggestions is reducing regulation wherever possible. Most participants agreed that federal and state government should forbear from regulation that inhibits broadband entry, and should intervene only if broadband technology is not reaching the market in an expeditious manner. With respect to broadband data services, this means making reduction of regulatory uncertainty for the ILECs and others as soon as possible a top priority. For example, there was strong support for the FCC's bringing its Section 706 rulemaking to conclusion within six months of its announcement in August 1998.[1] In addition, conference attendees endorsed having states adopt broadband-encouraging policies as soon as possible.

Of course, the real issues lay in the details, and several did receive attention as requiring early resolution for broadband to flower. Many participants mentioned the potential phasing out of the unbundled network element (UNE) regulatory regime governing the ILECs. The majority believed it possible and desirable within the confines of the Telecommunications Act of 1996 to forbear from regulating the ILECs' digital subscriber line access multiplexers (DSLAMs), including any unbundling and discounting rules, even if ILECs' own broadband services are not operated by a separate subsidiary. This latter requirement is envisioned in the FCC's Section 706 proposals.[1]

Others felt such forbearance should only be allowed if the ILECs are demonstrably fulfilling requirements to unbundle local loops and provide co-location for CLECs' telephone service offerings. With respect to ILECs, if the incumbent carriers *do* establish separate subsidiaries to operate broadband services, as the FCC has proposed, most at the conference felt the offerings should then be unregulated. This is clearly a major and contentious issue that could benefit from the kind of new regulatory mechanisms discussed previously.

Of course the telephone companies are not the only ones beginning to offer broadband to the home. Cable companies are important players in this market. Some participants felt that the rate regulation of cable television systems should cease, as scheduled (March 1999) in the 1996 Act, and that more generally society will benefit if government forbears from regulation of cable companies. However, Robert Pepper, chief of the FCC's Office of Plans and Policy, argued that rate regulation is largely symbolic: it's been limited to the "basic" (lowest) tier of service which no more than a fifth of subscribers take. John Windhausen, General Counsel of the Competition Policy Institute, noted that even this limited amount of rate regulation may provide a restraint on cable firms' taking advantage of their current local market power. Moreover, some participants pointed out that cable could be seen as exerting monopoly control over a bottleneck facility. Bruce Posey, vice president of US West, asked why telephone companies but not cable face interconnection regulations, suggesting neither really ought to be regulated given the competition

between them: "What's the distinction between copper and coax going to the home?" But others emphasized the perspective of investors. The stock and bond markets assume that rate regulation will end in March 1999, and that cable in general faces a light regulatory regime. According to Ellen Berland Gibbs, president of CRI Media Partners and others, any reversal of that policy, however symbolic, would raise the cost of capital and discourage new investment in cable. In this way, they said, maintaining rate regulation—or placing new regulatory obligations or restrictions on cable—would undermine the objectives of encouraging investment and competition in residential broadband.

A related proposal, again one that generated a mixed response, was to encourage broadband deployment via wireless technologies. This would be accomplished by making more spectrum available as technically feasible, and by allowing more flexible spectrum use for broadcasters and others. Thus, for example, broadcasters might choose to use some of their spectrum allocations for video and another portion for wireless communication, including perhaps broadband access. This would inject more competition into the market and enhance economic efficiency, assuming that broadcasters know the highest, most profitable uses for the spectrum they control. Opponents argued this action would be unfair to current personal communication service (PCS) and other firms, many of which paid dearly for spectrum at public auction. It would give broadcasters in particular an even more valuable commodity than they already received via the 1996 Act, which deeded them, free of charge, what is to all intents and purposes licenses in perpetuity to spectrum designated for digital television. No resolution was reached.

Some discussion also arose over the wave of mergers and acquisitions hitting the telecommunications sector. Henry Geller, communications fellow of the Markle Foundation and former FCC general counsel, noted that mergers involving the large ILECs require balancing both benefits and detriments to the public interest. From the perspective of the conference, the important issue is whether the proposed merger would have a positive impact on deployment of advanced telecommunication capabilities. Geller made a recommendation that in weighing costs and benefits to

the public, government should not make such deployment a condition of merger approval. The decision to invest in any particular capabilities should be left to business judgment of the firms, not the government. But the FCC and state-level officials can properly insist that the merged entity will adopt and promptly implement the established policies for interconnection. Parties to the merger should therefore be required to show in detail their commitment to carry out these policies, Geller urged. These suggestions did not generate any dissent. He further observed that states such as California have adopted the policy of requiring modest contributions by the merged firm to fostering community-based applications of advanced telecommunication services. Geller said that this may well be a sound step toward diffusion of these services. As "laboratories," states should evaluate and publicize the efficacy of any such steps, he said, and use the information in fashioning their own policies.

Modernizing Universal Service

The third primary focus of the conference was to elaborate suggestions for adapting the universal service tradition to what is presumed to be a broadband future. The basic premise shared by most participants was that government should create a market test for determining when residential broadband service becomes ubiquitous enough to meet the implied standard of the Telecommunications Act of 1996. The test would be applied through systematic monitoring of broadband service diffusion. Once past the market threshold, public policy should implement means-tested and carefully targeted universal service subsidies for broadband connection and service.

Among the societal needs cited as justification for universal service support for broadband connectivity were:

- providing emergency and medical services;
- delivering educational services;
- using residential network connections to allow work at home, enabling substantial savings on physical plant investment by employers, and on both individual and societal costs imposed by commuting;

- the pressures of globalization and the resulting need to enhance competitiveness of the U.S. population;
- access to employment and consumer information;
- potential enhancement of citizen participation; and
- preventing emergence of a serious chasm between the information haves and have-nots.

There was some discussion about the potential downside, as Bruce Posey put it, of having large numbers of "isolated individuals at the computer terminal instead of out in society." Jon Chambers, vice president of Sprint Spectrum, was among those who suggested another drawback of diving headlong into the digital age: that spending money on broadband may not be the wisest use of resources for all these goals. Even if there are educational uses of the Internet, for example, it might serve education better to invest society's resources in smaller classes and higher teacher pay than on bandwidth access. Moreover, there is a danger, cited by Barbara O'Connor, director of the Institute for the Study of Politics and Media at California State University, Sacramento, that using broadband for education could itself open up a two-class system. Elite students might receive the deluxe brand of schooling, in-person, with professors they can actually get to know. Meanwhile, less affluent students could be consigned to programs that rely fully on cheaper, impersonal telecommunication-based courses that give a new and undesirable meaning to "distance education." This is not to deny the potential advantages of harnessing telecommunication for educational and other uses, only to point out the dangers that even the benefits could pose of creating more inequality.

The issue of inequality thus deserves more scrutiny. Preliminary indications suggest that an undesirable gap between those who are comparatively information rich and those who are relatively information poor may indeed already be arising. The National Telecommunications and Information Administration (NTIA) released a study on July 28, 1998, based on census data for 1997 entitled, "Falling Through The Network II: New Data On The Digital Divide."[1] It reveals the increasing but uneven penetration of communication and information technology to the

home. As of 1997, 93.8 percent of households have telephones, 36.6 percent have personal computers (PCs), 26.3 percent have modems, and 18.6 percent have on-line access. Although telephone diffusion held steady since the last study in 1994, PC ownership increased 51.9 percent, modem ownership grew 139.1 percent, and e-mail access rose 397.1 percent. And the increases have occurred among all groups of the population. Yet what the NTIA calls the "digital divide" between some groups of Americans expanded between 1994 and 1997. The agency's report cites the rising gap between upper- and lower-income households and between whites on the one hand and blacks and Latinos on the other. However, another recent report, "Closing The Digital Divide: Enhancing Hispanic Participation in the Information Age," asserts that the gap between Latinos and whites is not increasing.

Unfortunately, the NTIA study does not present a multivariate analysis of the forces influencing the gap, but a series of univariate tables suggests the most powerful are education, income, ethnic status, and urban-rural place of residence. Income appears to be a powerful variable; households earning $10,000–$14,000 had a PC ownership rate of 47.7 percentage points lower than those earning $50,000–$74,999. Unsurprisingly, education also seems to exert strong influence: College graduates are 10 times more likely to own a PC than those without high school diplomas, and 22 times more likely to enjoy on-line access. The variables seem to act together in some cases. Thus when it comes to having on-line service, urban households earning over $75,000 are 22 times more likely to subscribe than rural households earning $5,000–$10,000 (50.3 percent versus 2.3 percent). At incomes below $15,000, 90.3 percent of whites, but 76.3 percent of blacks, and 78.4 percent of Hispanics have telephone service. The gaps between white and black or Hispanic ownership of PCs widened at all income levels between 1994 and 1997. The effects of income and ethnicity appear to be magnified by rural residence; more than a quarter of low-income black and Hispanic households in rural areas don't even have telephones, let alone on-line access.

Of course, similar stories could be told about other, older information technologies. Book ownership and readership, newspaper

subscriptions, and art museum attendance are all stratified by socioeconomic status. These differences provide a reason to expect the kinds of gaps arising for newer technologies, but not a reason to accept them. The possibility now exists that those in the higher social strata will leverage their networked communication capabilities to achieve a vast increase in social, economic, and political power—after all, such an enhancement is the central premise in optimistic scenarios of the information society—while those in the lower strata will fall still farther behind. The have/have-not gulf could become wider than it ever did when the main distinction between the more and less informed groups was reading good books and newspapers.

Such a situation is undesirable in a democratic system for many reasons, including the ultimate cost to social stability and economic growth of rising class disparities. According to an article in the *National Journal*, between 1979 and 1995, incomes of the poorest fifth of households dropped by 21 percent, while rising by 30 percent for the top fifth.[7] A recent survey found economists tracing 45 percent of this gap to information technology, with the rest of the change attributed to five other causes. Although some economists deny that the wage gap has grown substantially over the last decade or so, and there are some indications that it has narrowed since 1995, most agree that information technology could be a force that heightens disparity. As the Benton Foundation noted in its report "Losing Ground Bit By Bit" (1998): "Advances in telecommunications are speeding the exodus of good jobs from urban areas to the suburbs, leaving inner cities and rural areas more isolated than ever from the kinds of jobs, educational opportunities, quality health-care services, and technological tools that they need to be able to contribute to the overall economy." One economist's empirical study found that the wage gap in a company grows by 10 percent for every doubling of investment in computers. In a similar way, even if poor school districts spend as much as rich to provide students Internet-capable computers, it is predictable that, all else equal, the wealthier students will use it more effectively.

For decades, government policy was informed by the desire to maintain "universal service," which in practice meant ensuring

low residential rates for telephone service (even in sparsely settled rural areas where the true monthly cost could exceed $100), and provision of free broadcast radio and television. The new technology complicates the policy, but the 1996 Telecommunications Act gave voice to the consensus that universal service must be redefined to encompass residential access to advanced, broadband networked communication services.

The complicated question, of course, is exactly how to achieve this objective. Conference attendees generally agreed that an acceptable test for when to implement a new universal service policy might look like the following:

> *Once broadband technology is available to 50 percent of homes in a state and reaches adoption by 70 percent of those homes, regulators should consider the creation of portable means-tested credits for those who cannot afford broadband technology monthly service rates. These percentages are subject to discussion in each jurisdiction.*

Attendees were at pains to insist that the new subsidy program must not resemble traditional telephone universal service fund subsidy funds, much of which go to companies rather than individual users and often benefit affluent households. Instead, the new universal service subsidies would be targeted only to individuals in need, and the money would go directly to them rather than service providers or carriers. In addition, whereas the current regulated pricing structure contains many hidden or obscured subsidies (e.g., from urban to rural users and business to residential), the new subsidy system should be based as much as feasible on explicit levies that do not distort prices.

Participants disagreed on whether subsidies should be limited to use of broadband for nonentertainment purposes. Establishing a defensible and enforceable distinction between entertainment on the one hand and news or information on the other presents real difficulties. Given the political volatility of such Internet and media content issues as violence, obscenity, and pornography, we can predict that separating informative from merely entertaining or even damaging media content will be joined energetically

whenever subsidies are implemented. Also unclear in the conference deliberations and potentially controversial is whether subsidies should cover the basic access charge or usage as well. However, as with telephone service, basic broadband access may come with substantial or even unlimited use of nonpremium services. Current practice for cable modems and DSL seems to be to charge a flat rate for unlimited connection time. On the other hand, many of the services now free (often advertiser-supported) on the Internet could be converted to a payment basis in the future, making the question of usage subsidies more pertinent.

One other wrinkle: some participants suggested that all this worry over subsidies could be misplaced. Even though universal service necessitated subsidization in the old telephone regulatory regime, natural market forces may work to make affordable access to broadband nearly ubiquitous. After all, as Robert Pepper pointed out, cable television wires pass 95 percent of U.S. homes, even though they have never been subsidized. Although local franchise agreements did help ensure that cable firms would wire even the poorest neighborhoods and not engage in "redlining," market experience actually shows that poor areas often have high subscribership without subsidies. And Sheila Mahony, senior vice president of Cablevision Systems, reported that her firm will be upgrading its facilities to broadband everywhere, including all neighborhoods it serves, over the next six to eight years. Perhaps the safest observation is that any subsidy program installed may turn out to be less expensive than one might initially predict.

Aside from subsidizing individual residential users who cannot afford to pay the full cost of broadband access, policy enunciated in the 1996 Act establishes a so-called "E-rate" program to provide low-cost Internet connections (not necessarily broadband) for schools and libraries. Participants unanimously agreed that this program merits continuation, despite the considerable criticism that has been directed its way. They suggest some changes in the program, most importantly earmarking a portion of federal telecommunications excise tax revenue for providing computer technology to schools and libraries. First priority for these subsidies would be poor communities. Schools and libraries, whatever their financial status, would have to match any federal grant

received from this excise tax allocation. Because equipment is as much a problem as network connection for many school and library districts, participants also suggested providing federal and state tax incentives to corporations that donate or discount new or used (such as off-lease) computers. The value of the donated equipment could be used to help schools and libraries fulfill the matching requirement for the connection subsidy. A related move would have state and local governments encourage expansion or establishment of computer recycling programs that would make used computers discarded by organizations and businesses available to low-income households.

It is worth noting that Market Data Retrieval has written a report suggesting that more attention should be paid to training teachers in the best uses of computing and connectivity. The study found that 85 percent of schools have Internet access, and 44 percent of classrooms have one or more computers connected to the Internet. Yet a clear majority of schools (60 percent) said that two-thirds of their faculty don't use the Internet in instruction, and nearly half the schools (46 percent) said two-thirds don't utilize a computer for "instructional planning and or teaching."[34] It would seem an urgent task for policy makers (though perhaps not telecommunications policy makers) to find ways to make the technology more useable and useful—and actually used in the classroom. Lacking this effort, the criticism noted earlier, that investment in telecommunication hardware and software may be misdirecting public funds better used for smaller class sizes or other needs, will retain significant punch.

More generally, this study suggests that merely providing hardware and seemingly seductive capabilities may not be enough to get everyone involved in use of broadband services. Assuming we solve the problem of paying for access to everyone's home, there remain perhaps thornier issues of inducing them to use and benefit from that access. After all, unlike the average residential user, teachers are virtually all college graduates, and they presumably have strong incentives to use the technology—to make their teaching more effective or easier. Yet still, it appears, large segments if not majorities of them fail to make much use of computer and information technology. On the other hand, one reason

may be that typical 28- or 56-kbps dial-up access to the Internet is so frustratingly slow and limited that teachers find the capabilities of the Internet less compelling than they would with real broadband access. This is a good example of the chicken-egg problem that always confronts adoption of new technologies: demand is restricted by the limitations of early versions of the technology, but until demand grows sufficiently, there is insufficient profit incentive for companies to invest in upgrading and vanquishing the limitations. That is why demand stimulation, outlined as one of the steps in the new regulatory paradigm, becomes an important component ultimately in visions of universal service. The more paying customers, the more investment in advanced and broadband capabilities, and the more attractive and affordable those capabilities will become to a wider range of consumers.

Conclusion

As is typically the case with Aspen Institute telecommunications policy conferences, much was debated, less was settled. However, the three general themes did generate something surprisingly close to consensus. That is, almost (but not quite) all participants believed residential broadband service is a desirable and attainable goal in the relatively near term. All who spoke endorsed the urgent need to move toward a new regulatory paradigm featuring more informal and flexible opportunities to exchange information and settle conflicts. And most supported the need at the minimum to monitor the spreading uses of residential broadband and, if serious inequities develop, to implement a subsidy program that will reduce them. It is up to all parties concerned to cooperate in the joint interest of making this optimistic but seemingly achievable vision a reality.

Endnotes

1. See Robert Rowe, "Collaborative Approach May Enhance Section 271 Review: A Proposal for Discussion," *NARUC Quarterly Review* vol. 19, no. 2, pp. 123–5.

2. The project is housed on the National Regulatory Research Web page, *http://www.nrri.ohio-state.edu*.

3. At the time of publication, it seems unlikely that this issue will be resolved within six months of the announcement of Section 706, by February 1999.

4. FCC 98-187, *Notice Of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket 98-146, released August 7, 1998 (*http://www.fcc.gov/ccb/706/*) and FCC 98-188, *Memorandum Opinion And Order, And Notice Of Proposed Rulemaking*, CC Docket 98-147, released August 7, 1998 (*http://www.fcc.gov/ccb/706/*).

5. An electronic version of this report can be accessed at: *http://www.ntia.doc.gov/ntiahome/net2/*.

6. Anthony Wilhelm, *Closing The Digital Divide: Enhancing Hispanic Participation in the Information Age* (Claremount, CA: Tomas Rivera Institute, April 1998).

7. Neil Munro, "For Richer and Poorer," *National Journal*, 18 July 1998, pp. 1676–80.

8. Pamela Mendels, "Schools Get Internet Access, But How do Teachers Use It?" *New York Times*, 14 October 1998 (CyberTimes).

APPENDIX

The Thirteenth Annual Aspen Institute Conference on Telecommunications Policy

Conference Participants

August 9-13, 1998
Aspen, Colorado

Thomas Barry	Senior Vice President Federal Relations SBC Communications, Inc.
Kathryn Brown	Chief Common Carrier Bureau Federal Communications Commission
Jonathan Chambers	Vice President External Affairs Sprint Spectrum LP
Alan Ciamporcero	Vice President Regulatory Affairs GTE
Robert Entman	Professor of Communication Department of Communication North Carolina State University
Gordon (Don) Evans	Vice President Federal Regulatory Affairs Bell Atlantic
Charles M. Firestone	Executive Director Communications and Society Program The Aspen Institute
Henry Geller	Communications Fellow The John and Mary R. Markle Foundation

Note: Titles and affiliations are as of the date of the conference

Ellen Berland Gibbs	President CRI Media Partners
Adam Golodner	Chief of Staff and Counselor Antitrust Division U.S. Department of Justice
Steven Gorosh	Vice President and General Counsel NorthPoint Communications
Ted Jenkins	Vice President and Director Corporate Licensing Intel
Marlene Johnson	Chairperson District of Columbia Public Service Commission
Jessica J. Josephson	Former Director Department of Telecommunications & Information Services City and County of San Francisco
Deborah Lathen	Chief Cable Services Bureau Federal Communications Commission
Joel Lubin	Regulatory Vice President AT&T
John B. Lynn	Director Global Telecommunications Policy Office of Government Affairs EDS Corporation
Sheila Mahony	Senior Vice President Communications and Public Affairs Cablevision Systems Corporation
Susan Ness	Commissioner Federal Communications Commission

Note: Titles and affiliations are as of the date of the conference

Alex Netchvolodoff	Vice President Public Policy Cox Enterprises
Eli Noam	Professor of Finance and Economics Columbia Institute for Tele-Information Graduate School of Business Columbia University
Barbara O'Connor	Director Institute for the Study of Politics and Media California State University
Robert Pepper	Chief Office of Plans and Policy Federal Communications Commission
Bruce Posey	Vice President Federal Relations US West, Inc.
Thomas Reiman	Senior Vice President Public Policy Ameritech
Dan Reingold	First Vice President Global Telecommunications Research Merrill Lynch & Co., Inc.
Robert Rowe	Commissioner Montana Public Service Commission
Jonathan Sallet	Senior Vice President Chief Policy Counsel MCI Communications Corporation
Gail Garfield Schwartz	Vice President Public Policy and Government Affairs Teleport Communications Group
David Turetsky	Vice President Law and Regulatory Teligent

Note: Titles and affiliations are as of the date of the conference.

John Windhausen, Jr.	General Counsel Competition Policy Institute

Staff:

Patricia Kirsch	Program Coordinator Communications and Society Program The Aspen Institute
Sunny Sumter	Program Coordinator Communications and Society Program The Aspen Institute

Note: Titles and affiliations are as of the date of the conference.

About the Author

Robert M. Entman is a professor of communications at North Carolina State University. During the fall 1997 semester he was the Lombard visiting professor at the Kennedy School of Government, Harvard University. Formerly on the faculties of Duke University and Northwestern University, he holds a Ph.D. in political science from Yale University and an M.P.P. in policy analysis from the University of California, Berkeley. Dr. Entman is the author or co-author of numerous books and articles, including *Democracy Without Citizens: Media and the Decay of American Politics* (Oxford University Press, 1989), *Media Power Politics* (Free Press, 1981) and the forthcoming *Living Black and White: Media and Race in America* (University of Chicago Press). Dr. Entman has served as rapporteur of The Aspen Institute Conference on Telecommunications Policy for the past 13 years.

Previous Publications of The Aspen Institute Conference on Telecommunications Policy

All are authored by Robert M. Entman

Competition, Innovation and Investment in Telecommunications, (1998).

Implementing Universal Service After the 1996 Telecommunications Act, (1997).

The Communications Devolution, (1996).

Strategic Alliances and Telecommunications Policy, (1995).

Local Competition: Options for Action, (1994).

Competition at the Local Loop: Policies and Implications, (1993).

Toward Consensus on American Telecommunications Policy, (1992).

Shaping the Future Telecommunications Infrastructure: Ideal Visions and Practical Policies, (1991).

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The overall goal of the Communications and Society Program is to promote integrated, thoughtful, values-based decision making in the fields of communications, media, and information policy. In particular, the Program focuses on the implications of communications and information technologies on democratic institutions, individual behavior, instruments of commerce, and community life.

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